pre-merger profit margin of the downstream firm to the profit margin of the upstream firm is always less than 0.5 regardless of how the parameters of the demand function are chosen.[39] Therefore, the class of examples that CRA uses to investigate the welfare consequences of this particular transaction is inherently incapable of producing a ratio of pre-merger profit margins anywhere near the actual value of the ratio in this particular transaction.

Finally, I should point out that the particular linear formulation for demand curves that CRA chooses in its Appendix B "stacks the deck" in favor of finding that vertical mergers reduce prices to consumers. It does so by implicitly introducing an arbitrary assumption on how a reduction in demand affects the incentive of the upstream firm to raise or lower input price. After noting that the effect of a vertical merger in its model is to lower all prices paid by consumers, CRA explains this result by noting that there are three separate effects at work in its model.[40] (In this model, CRA refers to the two downstream firms as D1 and D2 and the upstream firm as U. The downstream firm that U vertically integrates with is D1.) The first effect CRA identifies is the reduction in double marginalization effect. This of course tends to reduce prices. I will call the second effect that CRA identifies the "demand reduction effect." CRA notes that the fact that D1 reduces its price results in a reduction of D2's demand. It then notes that this reduction in D2's demand gives U an incentive to lower the input price it charges D2.

> Ignoring for the moment the fact that U has merged with D1, the reduction in D2's upstream demand gives U the incentive to lower the upstream price to D2. This second effect works in the same direction as the elimination of the double markup, and tends to further reduce downstream prices.[41]

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[39] I explain this conclusion in Appendix C of this paper.

[40] *See CRA Report* at para. 142.

[41] *See id.*

The third effect that CRA identifies is the raising rivals' costs effect which of course tends to increase prices and harm consumers.

While CRA candidly and correctly points out that, in its model, the reduction in demand effect reinforces the reduced double marginalization effect, it does NOT point out that this is not a general result at all but depends critically on the particular functional form assumption that CRA makes for the demand curves. That is, in general, if the demand facing a monopolist with constant marginal costs of production is reduced, it is possible that the profit maximizing price for the monopolist will increase, stay constant, or decrease. Any of these results is possible depending upon the precise way that demand shifts in. CRA happens to have chosen a functional form for its demand curves such that a reduction in D2's demand causes U to find it optimal to lower the input price. However, they could have just as easily chosen a functional form where a reduction in D2's demand would cause U to find it optimal to raise prices. In this case, the reduction in demand effect would have magnified the raising rival's costs effect and made it much more likely that CRA would find that the merger would on balance harm consumers. Once again, I find that the model CRA claims can be used to analyze the effects of this particular merger makes implicit assumptions which tend to raise the likelihood that a vertical merger will benefit consumers. It does not note that these assumptions have this effect and it certainly does not attempt to justify that its assumptions are correct for the case of this particular merger.

C. There Is Evidence to Suggest That There Are Barriers To Entry In The Market For Regional Sports Networks

Lexecon argues that barriers to entry are low in the market for regional sports programming and therefore, in particular, that rivals' of DirecTV could respond to higher prices

for regional sports programming by out-bidding News Corp. for the regional sports programming and starting substitute regional sports networks of their own.[42] A careful reading of the Lexecon report reveals that Lexecon supports its statement by

- offering its own opinion that the necessary skills and resources to create regional sports networks are "presumably widely available"; [43]
- citing one newspaper article that states that some major league baseball teams are considering starting their own networks;[44] and
- observing that no one opposed to the transaction has provided any evidence that there are high barriers to entry in this industry.[45]

While there is not a great deal of evidence on this subject, the evidence that does exist suggests that barriers to entry into the regional sports network industry may more substantial than Lexecon asserts.

For example, a recent article in Cable World on the subject of the start-up of new regional sports networks by sports teams and MSOs, points out that the history of failed attempts to enter this industry suggests that entry may actually be quite difficult. The article observes that it is by no means a sure or simple process for a new regional network to gain carriage on a sufficiently large number of MVPDs and that even the attempt of billionaire Paul Allen to start his own regional sports network failed when he wasn't able to obtain carriage quickly enough on enough MVPDs:

> Some owners have tested the mini-regional concept, only to then turn to the sure money from Fox Sports Net, the clear leader in local sports in most markets. Paul Allen tried and failed when his Action Sports Network featuring his Portland Trail Blazers couldn't

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[42] *Lexecon Report* at ¶¶ 12-20.

[43] *Id.* at ¶ 16.

[44] *Id.* at n.18.

[45] "Indeed, none of the critics has presented evidence to suggest otherwise." *Id.* at ¶ 16.

> get on AT&T Broadband systems. The billionaire cut his losses last fall and abruptly shut down the ambitious network with its hi-def programming, and thus the Blazers are back on Fox Sports.[46]

Furthermore, the article points out that, while it is natural for potential entrants to try and start small with perhaps only one or two teams, such small networks are prone to failure both because they are unattractive to MVPDs and because they are not able to supply enough high-quality programming to fill the time slots. The article quotes a number of industry participants who suggest that small-scale entry is difficult and unlikely to succeed:

> 'The likelihood of launching a successful regional sports network with only one team is very small,' says Dean Bonham, chairman of the Bonham Group, a Denver sports marketing consultancy. 'There are a thousand better ways to invest your money than a one-team network.' Even a two-team network isn't always worth the gamble. 'Tom Hicks tried it in Dallas and ultimately ended up negotiating a deal with Fox. Disney tried it in Anaheim and ended up negotiating with Fox,' Bonham recalls. 'Both entities came to the conclusion that Fox's offer was better than going into business by themselves. They were better off taking the bird in the hand versus the one in the bush.' Says Pilson, who advised the Minnesota Timberwolves on their decision to go with Fox instead of joining a new competing network, 'The one-team regional concept is fraught with problems. You simply don't have enough year-round programming. You may not be able to get enough money per sub. Plus, you take on the risk of advertising sales and production costs.'[47]

The article concludes that News Corp. does not appear to be particularly vulnerable to entry of competing sports networks:

> Now Fox seems to be secure enough to play hardball with owners and to wait out their efforts to start their own networks or go with a new RSN. Fox is also willing to let networks go dark when an MSO refuses a rate hike as is the case now with Time Warner Cable, the Sunshine Network, and Fox Sports Net North.[48]

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[46] Staci D. Kramer *Feature: Sports Nets Get Closer to Home*, Cable World, January 6, 2003.

[47] *Id.*

[48] *Id.*

Furthermore, in an article entitled "RSNs: A Hard Market to Break" Kagan analyst Jonathan Blum also explains that the RSN market is lucrative but that Fox's position is secure because entry, especially small-scale entry, is difficult:

> MSOs and team owners are smart to look at the regional sports business. We estimated total RSN revenue hit $1.8 billion for 2002, up by about 11 percent from the previous year. But a look at the operational economics shows the business is *not trivial to enter.* RSN's are dominated by one player: News Corp. Blurry carriage and affiliate deals hide exact relationships, but of the 80 men's professional sports teams in the U.S., 50 have exclusive carriage deals with Fox. The limited carriage picture is further tightened by the subscriber dependency and the high costs of the RSN. We modeled the expenses and revenues of a vertically integrated RSN with stakes in sports teams and cable distribution with 1.6 million subs and showed that operating margins in the 50% range are possible. Drop that subscriber number down and take away the scales of cross-ownership and the stubborn costs of professional rights, remote production fees and ad sales quickly eat up available profits.[49]

Thus, it is by no means as self-evident as Lexecon makes it seem that barriers to entry into sports programming are low enough to discipline any attempt by News Corp. to raise prices or reduce output in this market once it has acquired control of DirecTV.

D. The Efficiencies That News Corp. Claims For This Transaction Are Generally Unrelated To Its Vertical Relationship With DirecTV

Lexecon asserts that vertical mergers are, in general, likely to benefit consumers and not harm them.[50] To the extent that Lexecon is attempting to argue that the theoretical literature on raising rivals' costs somehow proves or even suggests that the double marginalization effect is likely to generally dominate the raising rivals' costs effect, I have already explained why I believe they are wrong and, furthermore, why the published academic work of one of the principle CRA experts, Steven Salop, comes to much the same conclusion. However, I believe

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[49] Jonathan Blum, Kagan, *RSNs: A Hard Market to Break*, Cable World, January 6, 2003 (*emphasis supplied*).

[50] *See Lexecon Report* at ¶¶ 5-7.

that there is a less extreme interpretation of the Lexecon statement that would find much broader acceptance in the economics community. This is that vertically related firms are participating in a cooperative activity which in principle might well benefit from closer coordination while horizontally related firms are not. Therefore, *a priori*, the extra need for coordination between vertically related firms suggests that policy makers should give more deference to firms' judgments that they could benefit from the closer coordination in their joint productive activities that vertical integration would allow.[51]

While I agree that this is the prevailing view, I would submit that the prevailing view is also that vertical mergers can be potentially harmful to consumers and that there is therefore a need for regulators to review the specific circumstances of any particular merger to ascertain its effects on consumers.[52] Furthermore, I find it both interesting and relevant that the nature of the projected efficiencies that News Corp. has touted most highly for this particular transaction are, for the most part, NOT associated with closer coordination of the vertical relationship between DirecTV and News Corp. Rather, they are the more generic sort of efficiencies that are generally also raised in the context of horizontal mergers. For example, News Corp. suggests that some economies of scale and beneficial knowledge transfer of best practices across firms will result

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[51] *See*, for example, Riordan and Salop, *supra* note 5, at 548-49 (". . . vertical mergers are entitled to a greater presumption of cost savings and other efficiency benefits that are horizontal price restraints and horizontal mergers. Vertical mergers involve firms that normally have a contractual relationship to one another that contains cooperative elements. [footnote omitted] This is very different from the paradigmatic horizontal merger or horizontal price-fixing matter.").

[52] *See* Riordan and Salop, *supra* note 5, at 550 ("Simply because some efficiency benefits are identified does not demonstrate that these benefits exceed the magnitude of competitive harms. Absent proof of sufficiently offsetting efficiency benefits, we think that the vertical merger should be judged anticompetitive."). *See also* previous quote from Riordan and Salop Reply, *supra* note 33.

because of cooperation between News Corp.'s foreign satellite subscription services and DirecTV.[53] This is essentially the sort of economy of scale/transfer of best practices argument always made for horizontal mergers.

News Corp. also suggests that its management is more dynamic, capable, and knowledgeable than DirecTV's management[54] and that News Corp. can make capital available to

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[53] *See News Corp Interrogatory Response* at 33 ("Also through application of the lessons learned with other DTH systems, [Hughes] will be able to improve the customer service experience – thus attracting new subscribers and reducing churn"); *id.* ("By taking advantage of its experience overseas, [News Corp.] will be able to more easily introduce a host of innovative products and services, including an enhanced level of interactive television"); *id.* at 34 ("By integrating DIRECTV into its other affiliated DTH platforms, News Corp. will be able to spread the cost of developing new technologies and accelerate the deployment of any resulting products and services."); *id.* ("News Corp. intends to bring the benefit of its DTH experience to every aspect of Hughes management and the company's interface with consumers."); *id.* at 39 (". . . by combining DIRECTV's subscriber base with that of News Corp.'s other DTH affiliates, News Corp. will be able to more efficiently defray the enormous research and development costs associated with bringing new services and features to market."); *id.* at 43 ("Also crucial to customer satisfaction, however, is customer service. Here News Corp.'s overseas DTH distributors have developed a set of 'best practices' to improve the overall attractiveness of their services.").

See also id. at 37-88:

> News Corp. also believes it will be able to help Hughes lower its general and administrative expenses by roughly $40 million to $80 million per year. News Corp. expects to be able to reduce these costs based upon its experience in successfully building and managing what is generally considered to be one of the most successful satellite television operations in the world (BSkyB), and thus to achieve levels more closely approximating the low cost provider in the U.S. market (Echostar). Moreover, News Corp. will be able to help Hughes lower its expenses for satellite and other transmission facilities and services by drawing on its experience with other DTH systems and rationalize operational areas that overlap with News Corp.'s subsidiaries – with potential cost savings of between $7 million and $15 million annually."

[54] *Id.* at 31 (". . . the most important assets that News Corp. will bring to Hughes are its vision, energy, and expertise."); *id.* ("Similarly, the Applicants in this proceeding have described the manner in which News Corp.'s expertise, spirit of innovation, and willingness to challenge established incumbents will make DIRECTV a better competitor . . .").

DirecTV.[55] Once again, these projected efficiencies are not reasonably related to the vertical relationship between News Corp. and DirecTV. Therefore, to the extent that News Corp. is NOT arguing that this transaction will allow it to coordinate its vertical relationship with DirecTV better and is instead simply advancing the same sort of generic efficiency arguments that are typically made for horizontal mergers, it is not clear to me that these efficiency arguments merit any more deference than they would be given in the case of a horizontal merger.

E. Current Regulations Requiring Good Faith Negotiations for Retransmission Consent Do Not Provide Sufficient Safeguards

News Corp has offered to abide by the program access rules for the case of cable network programming. However it has argued that no such condition is needed for the case of the broadcast signals of Fox O&Os because current regulations requiring O&Os to negotiate fairly with all MVPDs provide sufficient safeguards.[56] The most glaring flaw with this argument (which News Corp acknowledges in a footnote[57]) is that the current regulations are set to expire on December 2005. Therefore, appealing to the protections afforded by the current regulations is disingenuous at best. Furthermore, the regulations that apply to the case of local broadcast signals, which simply mandate good faith negotiations, are weaker than the program access rules, which prohibit discrimination of any sort.[58]

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[55] *News Corp Interrogatory Response* at 35 (". . . DIRECTV's post-transaction capital structure will no longer be subject to competing (and often incompatible) capital requirements of GM's automotive business, and thus Hughes will be much better able to obtain financing as it sees fit to develop and deploy these and other services.").

[56] *See News Corp. Reply* at 44-47.

[57] *See id.* at n.104.

[58] I argued in my initial affidavit that I believe that even the program access rules might not provide sufficient safeguards because they would not prevent a price rise to all MVPDs, including DirecTV. This criticism would apply equally well to the case of local broadcast signals. Therefore I am NOT arguing in this section that I believe program access–like rules

F. CRA's Argument That The Transaction Will Not Cause Prices to Rise Because "Fox's Fees Today Already Maximize the Profits that Fox can Earn on Programming" Makes Three Basic Errors in Economic Reasoning

CRA quotes the prediction of a consumer advocate that the transaction will cause programming prices to rise and provides the following critique of it:

> First, the presumption of the quote that all cable operators would simply accept and pay higher fees for Fox programming is clearly inconsistent with the fact that Fox's fees today already maximize the profits that Fox can earn on its programming. Fox must believe today, in the pre-acquisition world, that raising its affiliate fees would run the risk of losing carriage on some cable systems; or it would have raised its fees already. The proposed transaction would not make an increase in affiliate fees more likely. It would not lower the elasticity of demand facing Fox programming.[59]

I submit that CRA has managed to make three fundamental errors in economic reasoning in this short quote.

First, CRA ignores its own theory of raising rivals' costs as outlined in its Appendix B. Even if Fox is able to announce the profit maximizing take-it-or-leave-it price to downstream firms, after it acquires control of DirecTV, Fox shares in DirecTV's profits and this, in general, changes the calculation of the optimal take-it-or-leave-it price. Therefore, in CRAs own raising rivals' costs theory, even though the upstream firm is choosing the optimal take-it-or-leave-it price before the merger, this does NOT mean that the deal will leave price unchanged. The transaction changes the firm's objective function and thus changes its profit maximizing price.[60]

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would necessarily provide sufficient safeguards to prevent this merger from harming consumers. I am simply arguing that the News Corp.'s offer to abide by program access rules for the case of cable network programming provides more safeguards than does the fact that is will be required by law to abide by the good faith negotiations requirements that apply to retransmission consent negotiations.

[59] *CRA Reply* at ¶ 93.

[60] Of course, CRA argues that the net effect of all of the incentive changes for this particular merger will result in decreased prices. I dispute this assertion in part III.B. of this paper. My

Second, in the above quotation CRA sketches a second, somewhat more complicated theory, and its conjecture about this theory is also incorrect. Namely, in the above quotation CRA sketches a model where it assumes that the upstream firm is able to make a take-it-or-leave-it offer to downstream firms, but that the upstream firm only has a probabilistic notion of whether or not downstream firms will accept or reject its offer.[61] It suggests that the transaction would NOT change the calculation of the optimal take-it-or-leave-it price in this model either. Once again, this is incorrect. When there is a probability that the downstream firm will reject the upstream firm's offer, the severity of the consequences that the upstream firm would suffer if its offer was rejected plays a role in the upstream firm's calculation of the optimal price to offer. In particular, if the consequences of a rejection become less severe, it will generally be optimal for the upstream firm to offer a higher price in such a model. Of course, the effect of the transaction is to make the consequences of a rejection less severe for the upstream firm.[62] Therefore, a correct analysis of the alternate model that CRA sketches suggests they have ignored another possible reason why the optimal take-it-or-leave-it price might rise. [63]

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point here is simply that CRAs statement that the merger will not change prices because News Corp. is already maximizing prices before the merger is not even consistent with its own theory of raising rivals' costs.

[61] The standard raising rivals' costs models, including the one provided by CRA in its Appendix B, assume that the upstream firm has complete information about the downstream firms and is thus able to perfectly predict whether or not they will accept any particular offer.

[62] This is because the profits earned by DirecTV will to some extent offset the losses on programming experienced by News Corp.

[63] In fact, this idea would provide the basis for a different, but somewhat related theory of harm to the "increased bargaining power theory" that I have outlined in this paper. This theory would also have the feature that price rises are caused because News Corp. takes account of DirecTV's increased profits when News Corp. withholds programming from its rivals', but the reason the effect occurs would be somewhat different.

Third, and most importantly, when CRA refers to the *fact* that the upstream firm is able to announce the profit-maximizing take-it-or-leave-it price before the transaction, it of course not referring to a *fact* at all. Rather, it is referring to its own *assumption* that the upstream firm is able to announce such a price. A major point of my analysis has been that the facts of this case suggest that this is a particularly poor assumption for analyzing this particular deal. In the case of the market for programming it is widely accepted that firms bargain over price. Therefore the effect of the transaction on News Corp.'s bargaining power must be considered. Of course, I have explained why this effect also suggests that News Corp. will raise prices after the merger.

G. The Harms that I Predict this Transaction Will Cause in No Way Depend on the Ability of News Corp. to Take Advantage of the Outside Shareholders of DirecTV

In its reply comments, News Corp asserts that all of the theories of foreclosure I and others raise do not apply to this transaction because (i) all the theories depend in some way on the ability of News Corp. to take advantage of the outside shareholders of DirecTV and (ii) the Audit Committee will be able to prevent News Corp. from taking advantage of the outside shareholders of DirecTV. Specifically News Corp. makes the following statement:

> Each of the vertical foreclosure theories described above depends in one way or another on the proposition that Hughes will put the interests of News Corp. – a 34% shareholder – above its own. This is simply not plausible, given the separate interests of the remaining 66% shareholders and the corporate governance mechanisms that are in place, bolstered by corporate and securities law.[64]

I would like to be perfectly clear: NONE of the theories of harm that I have advanced either in this Affidavit or my original Affidavit depend in any way on the assumption that News Corp. will be able to take advantage of the outside shareholders of DirecTV. My predictions of News Corp.'s and DirecTV's likely behavior after the takeover have been based on the

assumption that the two firms will be able to coordinate their activities to maximize their joint profits and nothing more. Far from assuming that News Corp. and DirecTV will be locked in a fractious battle in which they try to take away each others' slices of the pie, I am assuming that they will

be able to cooperatively work together to maximize the size of pie that they are splitting and thus increase the size of each of their pieces. Therefore, the issue of whether or not the Audit Committee will be able to protect the interests of the outside shareholders of DirecTV is simply irrelevant to the theories of harm that I have advanced. In particular, even if it is true that the Audit Committee will be able to fully and completely protect the interests of the outside shareholders of DirecTV, this in no way makes any of the harms that I predict this transaction will cause smaller or less likely to occur.

CONCLUSION

News Corp.'s takeover of DirecTV will harm consumers because it will provide News Corp. with both an increased incentive and an increased ability to raise the prices that it charges rival MVPDs for programming. These price increases will be passed through to consumers. While it may not turn out to be generally profitable for News Corp. to permanently withdraw its programming from rival MVPDs after it acquires control of DirecTV, the revenue that News Corp. would lose from withdrawing programming from rival MVPDs will be at least partially offset by the profits that News Corp. would earn from subscribers that switch to DirecTV. This will make the threat of withdrawing programming more credible and thus allow News Corp. to

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[64] *News Corp. Reply Comments* at 53.

bargain for higher prices. Furthermore, temporary withdrawals of programming are very likely to be profitable for News Corp. after it acquires control of DirecTV. These temporary withdrawals will directly harm consumers and will also provide News Corp. with even more bargaining leverage in its negotiations over programming prices with rival MVPDs.

I declare that the foregoing is true and correct:

/s/
William P. Rogerson

Dated:

August 4, 2003

APPENDIX A

A SIMPLE MODEL OF BARGAINING BETWEEN A BUYER AND A SELLER

In this Appendix I will present a simple model of how a seller and buyer negotiate the price of a good and how the negotiated price depends on the best other offer that the seller has received. This model illustrates the central idea of the theory that a vertical merger will increase an upstream firm's ability to negotiate a higher price with rival downstream firms.

Suppose that a seller owns the good and the good is worth nothing to the seller if he keeps it. Also suppose that there is only one possible buyer for the good and that the good is worth $10 to the buyer in the sense that the buyer would be indifferent between paying $10 for the good and consuming it vs. not purchasing it at all. Furthermore, suppose that the buyer knows the good is worthless to the seller and that the seller knows the good is worth $10 to the buyer.

If the seller could make a take-it-or-leave-it offer to the buyer, the seller would offer a price just slightly less than $10 since he would know that the buyer would rationally accept this price if his only other alternative was not to buy the good. Similarly, if the buyer could make a take-it-or-leave-it offer to the seller, the buyer would offer a price just slightly above $0, since the seller would rationally accept this price if his only other alternative was to not buy the good. In general, we expect that the buyer and seller would be able to negotiate a price at which the sale would occur, that the price would be somewhere between $0 and $10, and the exact value of the price that they negotiate would depend upon the buyer's and seller's bargaining power. Economists often capture these ideas in a simple formal model by simply assuming that there is a parameter α between 0 and 1 which we can interpret as a measure of the seller's relative

bargaining strength and that the negotiated price is equal a weighted average of the highest price the buyer is willing to pay (with weight α) and the lowest price the buyer is willing to accept (with weight $(1- \alpha)$). That is, the negotiated price is determined by the formula

$$(A.1) \qquad p = (1- \alpha)\, 0 + \alpha\, 10$$

which can simply be rewritten as

$$(A.2) \qquad p = \alpha 10.$$

Setting α equal to ½ would then correspond to the situation where the buyer and seller have relatively equal bargaining power, and economists refer to this particular outcome as the Nash bargaining solution.

Now, suppose that there is one change to the above situation; namely, the seller's circumstances change and the seller is able to consume the good himself if he doesn't sell it to the buyer. Suppose, in particular, that the good is now worth \$4 to the seller if he keeps it himself instead of \$0. The simple bargaining model described above predicts that the new price that will be negotiated is now equal to

$$(A.3) \qquad p = (1- \alpha)\, 4 + \alpha 10.$$

In particular, the effect of a $4 increase in the value of the good to the seller is to result in a price increase of $(1- α)4. Therefore, simple bargaining theory predicts that if the good becomes worth $4 more dollars to the seller, this will always enable the seller to negotiate a higher price except in the polar extreme case where one assumes that the seller is able to make a take-it-or-leave-it offer to the buyer. (In this case, the seller is able to charge a price of $10 no matter what the value of the good is to himself.) In particular, simple bargaining theory predicts that when the buyer and seller have relatively equal levels of bargaining power, if the good becomes worth $4 more to the seller this should allow the seller to negotiate a price that is about $2 higher. That is, when a buyer and seller bargain over the price of a good, and when they have relatively equal levels of bargaining power, we expect increases in the value of the good to the seller to yield increases in price of about half that amount.

The application of this model to the case of a vertical merger should be apparent. Suppose that an industry consists of one upstream firm U and two downstream firms Dl and D2. Suppose that U is considering merging with D1. Consider the effect of this merger on the bargaining problem between U and D2. Suppose that D1's profits will increase by some amount π if U does not sell input to D2.

The effect of U's merger with D1 on the bargaining problem between U and D2 is therefore essentially to increase the value of the input to U by π dollars.

As explained above, in a case where U and D2 have relatively equal bargaining strengths, we would expect this to result in an increase in price of about $\pi/2$ dollars.

APPENDIX B

CALCULATIONS OF THE PROFITABILITY OF FORECLOSURE FOR THE CASE OF RETRANSMISSION CONSENT OF LOCAL BROADCAST SIGNALS

1. Introduction

CRA considers a hypothetical case in which, after the instant transaction closes, News Corp. permanently withholds programming from a rival MVPD and this causes some subscribers to shift from the rival MVPD to DirecTV. It calculates the size of demand shift that would be necessary in order for withholding to be profitable for News Corp. and argues that this is larger than would be plausible. In the main body of this Affidavit, I show that there is a serious conceptual error in the CRA calculations and that, when this error is corrected, that the size of the required demand shift is much smaller, and much more plausible. I also use the CRA model to calculate the profitability of temporary program withdrawals and show that the size of the required demand shift to make temporary program withdrawals is much smaller yet.

CRA performed its non-confidential calculations for two different types of programming -- regional sports networks and local broadcast signals. In the main body of this Affidavit, I presented the corrected calculations for permanent program withdrawals and the new calculations for temporary program withdrawals for the case of regional sports networks. In this Appendix, I will report the same calculations for the case of local broadcast signals.

2. Sketch of the CRA Calculations

Just as for the case of regional sports programming, I will begin by sketching the CRA calculations precisely as they did them mainly in order to recover the ratio of relative profit

margins that they assume. As for the case of regional sports programming, assume that DirecTV has a market share of .13 and that its rivals have a market share of .87. Let x denote the advertising revenue that News Corp. earns per viewer on its local broadcast signal and let y denote the profit margin that DirecTV earns per subscriber on its satellite subscription service. Just as before let s* denote the share of all MVPD subscribers that shift to DirecTV when News Corp. withholds the local broadcast signal from DirecTV's rivals. Let N continue to denote the total number of MVPD subscribers so that s*N denotes the number of subscribers that shift.

One additional complication that needs to be considered in the case of local broadcast signals is that, when News Corp. withholds the signal from an MVPD, a fraction of the subscribers that remain with the MVPD will continue to view the local broadcast channel using the over-the-air signal. Rather than choose a particular value for this fraction, I will perform the calculation for any value by using the variable "z" to denote the fraction of subscribers that remain with the MVPD that continue to view the local signal after News Corp. withholds retransmission consent. The calculations for the regional sports programming case were the calculations for the case of z=0 (since none of the subscribers who remain with the MVPD view the regional sports programming once it is withdrawn from the MVPD). Therefore, when I redo the calculations for the case of local broadcast signals, I will essentially redo the calculations for the general case where z can assume any value instead of the special case where z is equal to zero.

News Corp.'s losses in advertising revenue from subscribers to the rival MVPD is

(B.1) $$L = x\{s^* + (1-z)(.87 - s^*)\}N$$

This is because, when News Corp withholds the local broadcast signal from the rival MVPDs, its loss is x dollars per subscriber. The number of consumers that leave and switch to DirecTV is s*N.[65] The number of consumers that stay with the MVPD and no longer watch the local broadcast station is (1- z)(.87-s*)N. The gain in profit of News Corp from the consumers that switch is[66]

(B.2) $$G = (x + .34y) \{ s^* N \}.$$

This is because News Corp. gains x dollars in programming profit and .34 y dollars on satellite subscription profit for every subscriber that switches and there are s*N subscribers that switch. Foreclosure will be profitable if and only if the gains are greater than or equal to the losses which can be written as

(B.3) $$(x + .34y) \{ s^* N \} \geq x \{ s^* + (1-z)(.87- s^*) \} N$$

Simple algebra shows that condition (B.3) can be rewritten as

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[65] I will also include s*N as a gain to News Corp. because the customers that switch to DirecTV continue to view the local signal. Therefore the loss and gain cancel. I include them both because this is the way CRA presents the calculation and I want to follow their presentation to the extent possible. *See CRA Report* at n.54.

[66] As I mentioned above I am presenting CRA's calculation exactly as they did it in this section in order to recover the value of relative profit margins that they assume. In particular, I am following their procedure of only including 34% of DirecTV's profits in the gain.

(B.4) $s^* \geq .87 / \{ 1 + (.34y/(1-z)x)\}$.

CRA first does the calculation for the case of $z = 0$ and reports that the RHS of (B.4) is equal to .40.[67] As for the case of regional sports programming we can use this report and equation (B.4) to recover the value of y/x that CRA used. This calculation reveals that the ratio of y/x relied upon by CRA is 3.46. That is, according to CRA, DirecTV's profit margin per subscriber on satellite subscription service is 3.46 times as large as News Corp.'s profit margin per subscriber on local broadcast signals.

3. The Correct Calculation

As I argued in Section II.2, the CRA assumption that News Corp. and DirecTV will not be able to coordinate their own actions to foreclose rival MVPDs when it would be jointly profitable to do this is incorrect. To correct this erroneous assumption, the gain in equation (B.2) should be calculated to be the joint gain of News Corp. and DirecTV. Therefore the correct calculation of the gain is

(B.5) $G = (x + y) \{ s^* N\}$.

Using the corrected calculation of the gain, withholding will occur if and only if

(B.6) $s^* \geq .87 / \{ 1 + (y/(1-z)x)\}$.

[67] *CRA Report* at ¶ 71 and n.54.

4. The Value of z

Now that I have calculated the correct formula for estimating s* and I have recovered the CRA value for y/x, I only need to assign a value to z in order to estimate s*. Recall that z is the fraction of customers remaining with the rival MVPD after the local broadcast signal is withheld that continue to watch the local broadcast station by receiving its signal over the air.

Determining the value of z is an important issue because the value of z has a major effect on the value of s*. To understand why, consider the extreme case where z is assumed to be 1 so that all of the rival MVPD's customers that stay with it continue to watch the withheld local broadcast channel by receiving its signal over the air.[68] In this case, it is clear that News Corp. would lose nothing by withholding its signal from the rival MVPD because all of the customers that remain with the rival MVPD would continue to watch the local channel in any event. Therefore s* is equal to 0. Substitution of z=1 into (B.6) confirms this result.

Unfortunately, there is no particularly good information available to estimate this fraction because there are no instances where a major local broadcast signal has been withheld from an MVPD for a significant period of time. One starting point might be the fraction of the rival MVPD's current customers that are able to receive the local broadcast signal over the air. Because using an A/B switch and possibly installing an antennae if it were needed is

[68] This extreme case would occur, for example, if viewing the local channel was extremely important to all subscribers. In this case, those that were unable to receive the signal over the air would switch to DirecTV so they could continue to receive the signal. Some of the customers that were able to receive the signal over the air might also switch to DirecTV. All of the customers that remained with the rival MVPD would watch the local channel using the over-the-air signal.

troublesome, we would not expect all customers that were capable of receiving the local signal over the air to continue to view the channel.

However, it seems likely that among the current subscribers to the rival MVPD, those who were unable to receive the withheld local broadcast signal over the air would be the most likely to switch to DirecTV. Therefore, after the customers that switch to DirecTV leave, the fraction of the rival MVPDs remaining customers that are able to receive the signal over the air would be higher than the fraction of its initial customers that were able to receive the signal over the air. It is obviously also the case that this fraction will vary tremendously between relatively dense urban areas where almost everyone is able to receive over the air signals to less dense rural areas where perhaps very few people are able to receive over the air broadcast signals.

The CRA report assumes that only 1/3 of the rival MVPDs customers that remain after the local signal is withheld from it will continue to watch the local station by receiving an over the air signal.[69] In more dense urban areas where almost all customers are able to receive local signals over the air, the fraction of the rival MVPDs customers who continue to watch the local station might well be higher than this. In table B.1 I report the calculated value of s^* for a range of values of z.

[69] *CRA Report* at ¶ 73.

Table B.1
The Value of s* for Different Shares of the Rival MVPD's Customers that Continue to Watch the Withheld Local Signal by Receiving an Over-the-Air Signal

Share of Customers Who Continue To Watch The Local Channel	Value of s*
0	.195
.1	.180
.2	.163
.3	.146
.4	.129
.5	.110
.6	.090
.7	.069
.8	.048
.9	.024
1	0

If we viewed an estimate of z=.5 as a reasonable point estimate to use in the absence of any additional information, then the point estimate of s* would be .110. While this is somewhat higher that the value of .066 for the case of regional sports networks, this value is dramatically lower than the value suggested by the CRA analysis.

The above calculations can be adapted to calculate the profitability of a temporary withdrawal of demand just as for the case of regional sports programming. Since the nature of the adaptation is exactly the same, I will simply report the formula for calculating s* rather than presenting its derivation. Just as for the case of regional sports programming, I assume that a three month withdrawal of programming causes a permanent shift of the share s* of customers to DirecTV and, using an annual cost of capital of 15 percent, I calculate the minimum value of s* that would make this withholding profitable for News Corp. The formula for this value is now

(B.7) $s^* \geq .87 / \{1 + 27.67(y/(1-z)x)\}$.

Substitution of the CRA value of 3.46 for y/x and the value of 0 for z[70] into equation (B.7) yields

(B.8) $s^* \geq .0090$

This means that a temporary withdrawal of the local broadcast signal of a Fox station would be jointly profitable for News Corp. and DirecTV if the temporary withdrawal would cause a permanent shift of just under one percent of the subscribers in the market.

Furthermore, this calculation probably overstates the extent to which News Corp. would suffer losses of advertising revenue during a temporary withdrawal of retransmission consent and therefore also overstates the size of demand shift that would be required to make the temporary withdrawal profitable. The above calculation assumes that advertising revenues will drop during a temporary withdrawal of retransmission consent to reflect the lower viewership during the temporary withdrawal. This would be perfectly correct if the number of viewers of the local station was constantly monitored and the advertising fees that were paid in any period were therefore determined by the actual number of viewers during that period.

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[70] The likely share of the rival MVPD's customers that would continue to view the local station via its over-the-air signal during a temporary withdrawal is likely to be smaller than the share that would ultimately do so in response to a permanent withdrawal. To be conservative, I will simply assume that none of the MVPD's customers will be able to watch the local station during a temporary withdrawal. This results in a larger demand shift. However, I will explain below that a counteracting effect in the case of temporary withdrawals is that News Corp. may be able to avoid losses of advertising revenue altogether to the extent that it can time its temporary withdrawals to avoid sweeps periods. Therefore, while the size of the demand shift I will calculate will be larger than otherwise because I assume that z is equal to 0, it is reasonable to interpret it as an upper bound.

However, it is my understanding that viewership is measured during certain sweeps periods and advertising fees generally reflect viewership measurements made during these periods. Since the precise timing of a temporary withdrawal will be largely under News Corp.'s control,[71] it should be able to largely avoid temporary withdrawals during sweeps periods. To the extent this is true, it is possible that advertising revenues would be completely unaffected by temporary withdrawals of programming. In this case s* would be zero instead of .009. Therefore, .009 should be interpreted as an upper bound.

[71] Even if an existing contract expired during a sweeps period News Corp. would have the option of waiting until after the sweeps period was over to withdraw programming.

APPENDIX C

THE PREMERGER RATIO OF THE PROFIT MARGIN OF THE DOWNSTREAM FIRMS TO THE UPSTREAM FIRM IS ALWAYS LESS THAN ½ IN THE SYMMETRIC LINEAR CRA MODEL

In Appendix B of its report, CRA presents a model of vertical integration with one upstream firm and two downstream firms where the downstream firms face a linear symmetric demand system and the upstream firm is assumed to make take-it-or-leave-it offers to the downstream firms. CRA chooses particular parameter values for the demand system and shows that the double marginalization effect outweighs the raising rivals' cost effect so that the net effect of a vertical merger on consumers is positive. In the main body of this Affidavit I observed that in the example calculated by CRA, the pre-merger ratio of the profit margin of the downstream firm to the profit margin of the upstream firm is .4. However in the actual cases of regional sports programming and retransmission consent for local broadcast signals, which CRA claims that this model sheds light on, CRA reports that the actual profit margin ratios are 12.11 and 3.46, respectively. Since the incentive for the upstream firm to raise rivals' costs should be higher when the value of this ratio is higher, this glaring discrepancy between the value of the ratio in CRAs example and the value of the ratio in real cases of interest throws the utility of the CRA example into question.

In this Appendix I will show that the fact that CRA's choice of parameter values yields a ratio of profit margins so different than the actual ratio of profit margins in the real cases of interest is no coincidence. Namely, I will show that in the linear symmetric example considered by CRA, that the ratio of the pre-merger profit margins of the downstream firms to the pre-merger profit margin of the upstream firm is always less than one half for any choice of

parameter values. Therefore, the model that CRA chose to work with is inherently incapable of producing a ratio of pre-merger profit margins anywhere near the actual values of these ratios in the real cases of interest.

I will begin by briefly describing the CRA model for the case of a general symmetric linear demand system. Assume that there is a single upstream firm, U, that sells an input to two downstream firms, D1 and D2, that produce differentiated products. The downstream firms need one unit of input to produce one unit of output. Assume that the upstream firm has zero costs of production and the downstream firms have zero costs of production other than purchasing the input from the upstream firm. Assume that the downstream firms face the demand system

(C.1) $$q_1 = a - bp_1 + rp_2$$

(C.2) $$q_2 = a - b\,p_2 + rp_1$$

where p_i denotes the price that firm i charges and q_i denotes the quantity that firm i sells. Assume that a, b, and r are all strictly positive and that $r<b$. Finally, let w_i denote the input price that firm Di is charged.

The formal game that is meant to capture the situation where all firms are separately owned is as follows. In the first stage U offers input prices to D1 and D2. Then at the second stage D1 and D2 simultaneously announce prices in the downstream market taking the input prices as given.

Let $p_i^N(w_1, w_2)$ and $q_i^N(w_1, w_2)$ denote, respectively, the Nash equilibrium price and quantity of Di in the downstream market conditional on the input prices (w_1, w_2). It is

straightforward to show that the se are given by

(C.3) $$p_1^N(w_1, w_2) = \{a(2b+r)+2b^2w_1 + rbw_2\}/\{4b^2 - r^2\}$$

(C.4) $$p_2^N(w_1, w_2) = \{a(2b+r)+2b^2w_2 + rbw_1\}/\{4b^2 - r^2\}.$$

(C.5) $$q_1^N(w_1, w_2) = \{ab(2b+r) - b(2b^2-r^2)\, w_1 + b^2rw_2\}/\{4b^2-r^2\}$$

(C.6) $$q_2^N(w_1, w_2) = \{ab(2b+r) - b(2b^2-r^2)\, w_2 + b^2rw_1\}/\{4b^2-r^2\}$$

Let $\pi^N(w_1, w_2)$ denote the equilibrium profit of U. It is defined by

(C.7) $$\pi^N(w_1, w_2) = w_1q_1^N(w_1, w_2) + w_2q_2^N(w_1, w_2)$$

Substitution of (C.3)-(C.6) into (C.7) yields

(C.8) $$\pi^U(w_1, w_2) = \{ab(2b+r)\}w_1 - \{b(2b^2-r^2)\}w_1^2 + \{2b^2r\}w_1w_2 + \{ab(2b+r)\}w_2 - \{b(2b^2-r^2)\}w_2^2$$

Straightforward calculus shows that the upstream firm's profits are maximized by the choice

(C.9) $$w_1 = w_2 = a / 2(b-r).$$

Substitution of (C.9) into (C.3) and (C.4) shows that the equilibrium downstream prices are given by

(C.10) $p_1 = p_2 = a(3b-2r)/2(b-r)(2b-r)$.

From (C.9) and (C.10) it follows that the profit margin of the downstream firms is given by

(C.11) $p_1 - w_1 = a/2(2b-r)$.

The profit margin of the upstream firm is of course simply w_1. Let γ denote the ratio of the profit margin of the downstream firm divided by the upstream firm. It is given by the formula

(C.12) $\gamma = (p_1 - w_1)/w_1$.

Substitution of (C.9) and (C.11) into (C.12) yields

(C.13) $\gamma = (b-r)/(2b-r)$.

Since

(C.14) $0 < r < b$

this implies that

(C.15) $0 < \gamma < ½.$